THE UNIVERSITY OF KANSAS
SCIENCE BULLETIN

VOL. XVII.] SEPTEMBER, 1927. [No. 3.

A New Protypothere from the Santa Cruz Formation of Patagonia.[1]

H. H. LANE, Department of Zoölogy.

IN THE collection of the Museum of the University of Kansas, among the fossils collected in 1903 by Mr. H. T. Martin from the Santa Cruz beds near the Rio Gallegos, in southern Patagonia, is an apparently undescribed species of *Protypotherium*.

Protypotherium martini, spec. nov.

Type. The left premaxilla and maxilla, with premolars 2, 3, 4, and molar 1; incisors, canine, and premolar 1, missing but the alveoli distinct; also a fragment of the left frontal, including the anterodorsal margin of the orbit; No. 19 (collector's No. 69) of the Patagonian collection, Museum of the University of Kansas, Department of Vertebrate Paleontology. Collected from the Santa Cruz beds near the Rio Gallegos, by Handel T. Martin, for whom the species is named on account of his indefatigable industry and ingenuity in the discovery of vertebrate remains, and in recognition of his knowledge of vertebrate paleontology.

So far as known to the writer, only six well-defined species of the genus *Protypotherium* have been previously described, and these by Ameghino. Of these, three, viz., *P. australe, P. prærutilum* and *P. attenuatum*, have been redescribed in such detail by Sinclair (see Reports of the Princeton University Expeditions to Patagonia, 1896-1899, Vol. VI, pt. I) that there is no difficulty in recognizing them, and the University of Kansas Museum has representatives of all three; of *P. australe*, in fact, the material is abundant. Three other species, *P. diversidens, P. diastematum*, and *P. claudum*, I have seen

1. Paper read at the seventh annual meeting of the American Society of Mammalogists, in Washington, D. C., April 7, 1925. (See Journal of Mammalogy, August, 1925, p. 213.)

only in photographs of Ameghino's types,[2] but, as will appear below, enough is known of them to afford a basis of comparison with *Protypotherium martini.*

The distinguishing characteristics of *P. martini* are best indicated by a comparison of the dental index of the three premolars and one molar in the type specimen with that of the corresponding teeth in other species heretofore described. By the term "dental index" is meant the ratio of width to length of a tooth obtained by dividing the maximum breadth of the crown by the maximum length, the quotient expressing the ratio in the form of a percentage. The value of the dental index lies in the fact that it allows direct comparison in a very exact way impossible otherwise even when the absolute lengths and breadths are stated, for in *Protypotherium* it is not affected by individual or age differences in size, since in this genus the proportions of a tooth vary less than absolute dimensions. It avoids the annoyances incident to the use of such terms as "slightly longer" or "scarcely as wide," etc., which are the bane of the systematist who may not have access to the identical specimen so described.

In *Protypotherium martini,* the first upper molar has a maximum length of 8 mm. and a maximum breadth of 4.5 mm., giving a dental index for this tooth of 0.5625. In *P. australe,* four specimens give an average dental index for the first upper molar of 0.6630, varying in individual cases from a minimum of 0.6250 to a maximum of 0.6930. In *P. prærutilum,* the corresponding data are: average dental index 0.7038, with a minimum of 0.6818 and a maximum of 0.7258. In *P. attenuatum,* the average dental index is 0.6872; maximum 0.7077 and minimum 0.6667. In other words, the first upper molar in *P. martini* is narrower in proportion to its length than the corresponding tooth in the other species mentioned.

In *P. martini,* the fourth upper premolar has a maximum length of 5 mm., and a maximum width also of 5 mm., giving a dental index of 1.0000. In *P. australe,* the fourth upper premolar has an average dental index (four specimens) of 0.8346, with a maximum of 0.9375 and a minimum of 0.7500. In *P. prærutilum,* the average index of the same tooth is 0.8188; maximum 0.8333 and minimum 0.8043. In *P. attenuatum,* the average index for the corresponding tooth is 0.8546, with a maximum of 0.9091 and a minimum of 0.8000. In

2. The photographs of Ameghino's types were made by Prof. W. B. Scott, of Princeton University, to whom the author is greatly indebted for the loan of them, since otherwise it would have been very difficult, if not impossible, to identify some of the species Ameghino has described.

short, while in the other three species the fourth premolar is distinctly longer than wide, in *P. martini,* the maximal length and breadth are identical.

In *P. martini,* the third upper premolar has a maximum length of 4 mm., and a maximum width of 5 mm., giving a dental index of 1.2500. In *P. australe,* the third upper premolar has an average dental index of 0.7090, with a maximum of 0.7500 and a minimum of 0.6667. In *P. prærutilum,* the corresponding tooth has an average dental index of 0.7359, with a maximum of 0.7608 and a minimum of 0.7111. In *P. attenuatum,* the corresponding data are: average dental index 0.7639; maximum 0.7778 and minimum 0.7500. In respect, therefore, to the third upper premolar, while in the other three species the maximum breadth is approximately only three-fourths of the maximum length, in *P. martini,* this premolar is actually one-fourth wider than long.

In *P. martini,* the second upper premolar has a maximum length of 3.5 mm., and a maximum width of 4 mm., giving a dental index of 1.1111. In *P. australe,* the second upper premolar has an average dental index of only 0.7000, with a maximum of 0.7778 and a minimum of 0.6603. In *P. prærutilum,* the average index of the same tooth is 0.6861, with a maximum of 0.7143 and a minimum of 0.6579. In *P. attenuatum,* the average index of the corresponding tooth is 0.7572, with a maximum of 0.7714 and a minimum of 0.7429. In respect, therefore, to the second upper premolar, while in the other species mentioned the width of the tooth is only three-fourths (or even less) of the length, in *P. martini,* on the other hand, the width of the tooth is over 10 per cent greater than the length.

Aside from the dental index, the most striking feature in *P. martini,* which serves to distinguish it from all the other species of the genus, is to be found in the shape of the posterointernal margin of the crown of the premolars. In the other species this margin of the upper premolars is broadly convex, whereas in *P. martini* it forms a distinctly *acute* angle, most noticeable perhaps in premolar 3, where this margin of the tooth terminates in a very sharp edge.

From the remaining three species of *Protypotherium* described by Ameghino, *P. martini* can be recognized by various characters. Thus, from *P. diversidens,* it may be distinguished first of all by size, since *P. martini* corresponds in this respect to *P. australe,* while *P. diversidens* is "of relatively small size." Furthermore, in *P. martini* the external vertical groove in the upper premolars runs the whole length of the tooth, being, if anything, deeper and more sharply de-

fined at the base of the crown than at the tip, while in *P. diversidens,* this groove, "broad on the crown but narrowing and suddenly disappearing toward the base," is distinctly different in appearance.

From *P. diastematum,* which has a short diastema between the first and second upper premolars, *P. martini* is distinguished by the total lack of such a diastema, premolars 1 and 2 evidently touching along their whole adjacent faces. Moreover, *P. diastematum* is about the same size as *P. prærutilum,* while *P. martini* is larger, equaling *P. australe* in this respect.

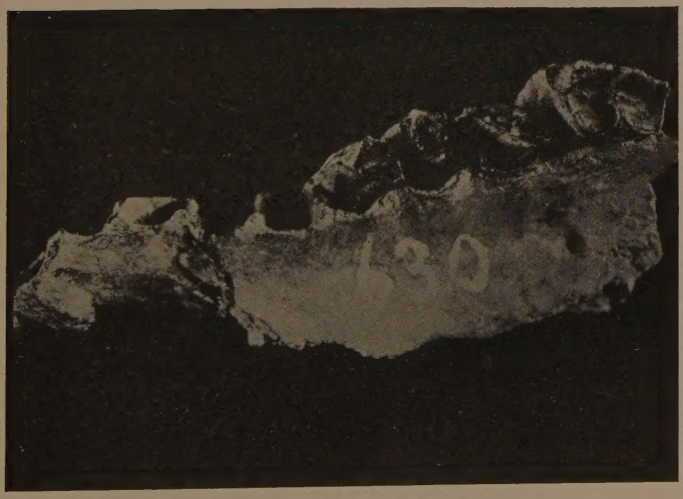
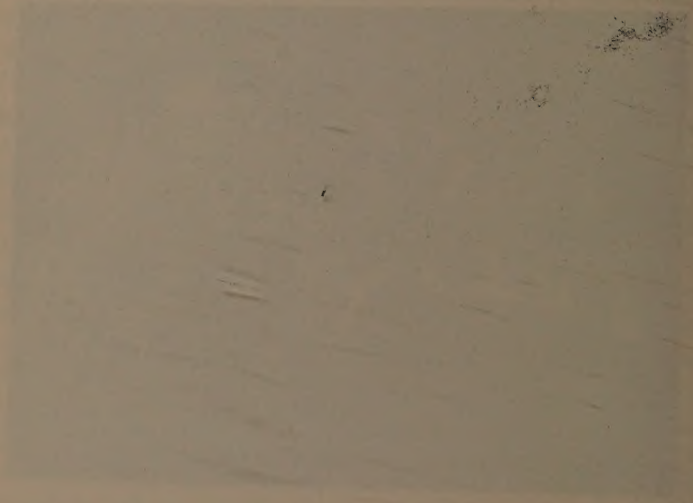
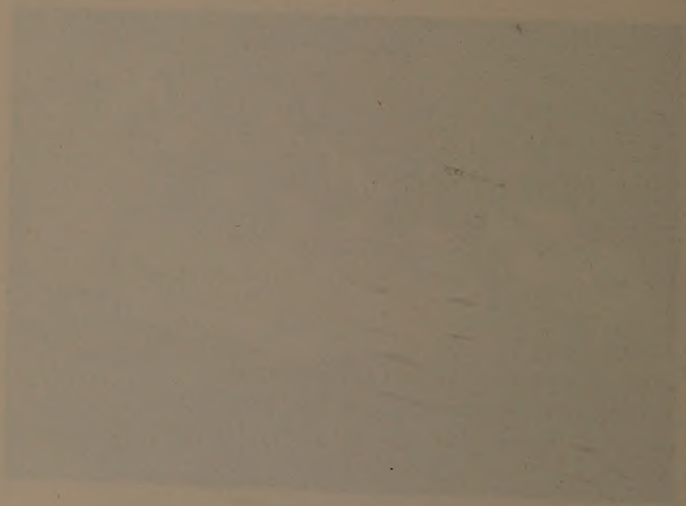
From *P. claudum,* which Ameghino knew only "from a fragment of the right ramus of the mandible," *P. martini* can be distinguished by size alone, since the mandible of the latter is wholly unknown, as is the premaxilla and maxilla of the former. But *P. claudum* is "of quite small size," while *P. martini* compares with the largest known species, so that the two are evidently distinct.

No other described species of *Protypotherium* are known to me. It seems, therefore, that *P. martini* must be recognized as a valid and easily distinguishable species. I have no hesitancy, therefore, in giving it a distinctive name despite the fragmentary nature of the type specimen.

PLATE XXVI-*A*.

Lateral view of the type specimen of *Protypotherium martini*.

PLATE XXVI-*B*.



Palatal view of the same.